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THE scientific school of Harvard University will offer, during the summer, courses in surveying in Martha's Vineyard.

LIEUT. MURRAY, of the First Artillery, United States Army, has been appointed to succeed Capt. Pettit as professor of military tactics at Yale University.

IN addition to the fellowships in the scientific departments of Cornell University, announced in the last number of this JOURNAL, the following appointments have been made: In civil engineering, Stephen Gregory, C.E. (University of Texas); chemistry, Hector R. Carveth, A.B. (University of Toronto); physics, Arthur L. Foley, A.B., A.M. (University of Indiana). Twenty-two fellowships and sixteen scholarships are awarded annually at Cornell University.

DR. ARTHUR ALLIN has been appointed professor of psychology and pedagogy in the Ohio University at Athens.

THE *Naturwissenschaftliche Rundschau* announces the following appointments: Dr. Otto Fischer, associate professor in the University of Leipzig; Dr. Paul Eisler, full professor of anatomy in the University of Halle; Dr. L. Joubin, professor of zoölogy in the Faculty of Science at Rennes; Dr. H. Prous, professor of zoölogy in the Faculty of Science in Lille; Dr. J. A. Wislicenus, professor at the School of Forestry at Tarandt; Dr. G. Frege, full professor of mathematics at the University of Jena; Dr. H. Klinger, full professor of pharmaceutical chemistry in the University of Königsberg, and Dr. Scholl, assistant professor of chemistry at Karlsruhe.

THE following docents have recently been recognized in German Universities: Dr. v. Geitler, at Prague, for physics; Dr. Hans Bateman, at Berlin, for astronomy; Dr. Wagner, of Strasbourg, at Giessen, for zoölogy; Dr. J. Hofer, at the technical high school at Munich, for electrolysis, and Dr. Scholl, at Leipzig, for physics.

DISCUSSION AND CORRESPONDENCE.

THE HABIT OF DRINKING IN YOUNG BIRDS.

TO THE EDITOR OF SCIENCE: In response to a request that has just reached me, may I

ask for space in your columns to say that the statement I made with regard to the habit of drinking in young birds was to the following effect? The chicks that I have observed pick instinctively at any small objects at suitable distance. If a small drop of water be such an object they will peck at that. But if a shallow tin of water be placed in their run the stimulus of the sight of still water does not evoke any instinctive drinking response. If there be grains of sand or food, or other objects at the bottom of the tin, they will peck at these and incidentally find the water. Sometimes they will peck at a bubble on the brim. Sometimes when one is thus led to drink others will follow by imitation. No sooner does the beak touch the water than, in the domestic chick, up goes the head and the instinctive drinking response is shown. I have seen ducklings waddle through the tin repeatedly and not stop to drink, though I had reasons for believing that they were thirsty; for when I dipped the beak of one of them beneath the water he drank eagerly and continued to do so for some time. On the other hand a little Moor hen or water hen, when I quickly lowered it at about 16 hours old into water, drank so soon as its breast touched the surface. It then swam off with instinctive definiteness of coördinated leg-movements.

The statement of fact (so far as my observations go) that I made was this: that the sight of still water evoked no instinctive response; but that the touch of water in the bill at once evoked the characteristic instinctive behavior.

C. LLOYD MORGAN.

A SUGGESTED EXPERIMENT ON HEREDITY.

As far as I have learned, there has been as yet no series of direct experiments on natural selection and heredity of acquired characters with adult animals. The success of Mr. Waller, President Cleveland's sporting friend, in baiting wild mallards with grain on platforms at different depths, so that the ordinary mallard is forced at length to dive six feet for its food, suggests that if such ducks were carefully thus trained, segregated and bred under scientific supervision, there might come some important results as bearing on the modification of struc-

ture by environment and on heredity. For example, we might expect increased webbing of the feet, and this might become hereditary.

HIRAM M. STANLEY.

LAKE FOREST, ILL., June.

DARKENING OF THE CATHODE IN A CROOKES TUBE.

A PEAR-SHAPED Crookes tube with a cathode disc in its narrow end has been used extensively by us during the past ten weeks in private experimentation and in public lectures on Röntgen rays. In common with many other experimenters, we have observed that after much usage the glass opposite the cathode disc and the glass about the anode became darkened. But we do not recall having seen any statement recorded regarding the darkening of the cathode disc. When we began using the tube the surface of the aluminium disc was uniformly bright throughout; now there is on the surface facing the broad end of the tube a dark brown ring concentric with the disc. This ring has an internal diameter of about 6 mm., and is darkest near its inner edge, the densest portion being, perhaps, 1 mm. across. Outside of this darkest portion the ring fades off gradually toward the outer edge of the disc. Taken as a whole, the internal and external diameters of the ring are about 5 mm. and 11 mm. respectively. The circular area inside of the dark ring is the brightest part of the disc. The diameter of the disc is about 17 mm.

During the discharge through the tube we now observe what we did not notice before, viz., a pencil of faint bluish light emanating from the circular area of the disc inside the dark ring. The pencil is normal to the disc. The light resembles the blue or purplish light about the anode. The cylindrical pencil is most distinct at the disc and gradually fades away and becomes invisible at a distance from it of about 2 or 3 cm. If, by reversal of the current, the disc is made the anode, then the pencil of blue light cannot be seen, but almost the entire tube is filled with the same purplish light. Sometimes this purplish light fills the tube also when the disc is used as a cathode. In such cases the discharge at the spark gap (placed in series with the tube) is fat and noisy; the tube shows

very little fluorescence and the radiation of Röntgen rays is greatly diminished.

FLORIAN CAJORI,

WILLIAM STRIEBY,

COLORADO COLLEGE, COLORADO SPRINGS.

SCIENTIFIC LITERATURE.

Voice Building and Tone Placing, showing a method of relieving injured vocal cords by tone exercises. By H. HOLBROOK CURTIS, PH. B., M. D. D. Appleton and Company. 1896.

This latest claimant for favor in the difficult field of voice production will be found to contain much that is old to those familiar with the subject of acoustics and some that is as unexpected as it is new. The struggling pupil will find it difficult to extract the pearl of good advice from the shell of lengthy discussion. From the preface one can see that the author realizes at once the difficulty of the problem and what its solution should be, but it is doubtful if he has fulfilled the promise.

The author begins with a brief outline of the history of music, which is followed by a description of the anatomy of the larynx which is naturally all right, until he begins to discuss the operation of the various parts, and here certain discrepancies arise. For example, we are told that there is but one register, or rather that registers are 'fallacies,' and yet in attempting to discuss our control of pitch he refers to reaching a 'stage in the production of the lower register,' where, 'for any other further elevation of pitch, a complete rearrangement of the vocal apparatus is necessary.' Just exactly what the devotees of registers claim. In point of fact, however, if one has the proper use of the voice, the same muscles control the pitch from lowest to highest, without break or interruption.

The above is an example of the uncertainty in which the reader is left; registers are called fallacies, and yet they are discussed at length; they are assumed to exist and their fundamental differences in mechanism pointed out. Another statement which is very misleading, to say the least, is that air pressure in the lungs affects the pitch of the tone; "the pitch of the tone depends upon the strength of the expiratory pressure." How can we then take a tone